

Lead and Zinc Toxicoses in Pet Birds

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Lead Toxicosis

Lead toxicosis is surprisingly common in pet birds. In fact, it is one of the most common toxicoses in avian medicine. Quite often, owners will not be aware of a source of lead in their homes, so a negative history should not rule out this disorder.

Due to their curiosity, birds will often pick up and chew on objects and will occasionally swallow small fragments. If the objects contain lead, the lead will be absorbed from the digestive tract into the bloodstream, from which it will be incorporated into bone and also carried to the brain. It has been shown to cause nervous system disorders and eventually lead to death.

A surprising number of household items contain lead. For example, it is common in curtain weights, cuckoo clock weights, fishing sinkers, some toys, shotgun shot, bullets, solder, putty, linoleum, mirror backing, costume jewelry, some zippers, ceramics that are not glazed to be food safe, wine bottle foil, and more. The two most common sources of lead toxicoses in pet birds are lead-based paints and leaded glass. Even though most paints used today do not contain lead, in older homes it is not unusual for birds to chew through the superficial layers of safe paint to expose and chew on the lead-based paints beneath, which are toxic.

An important means of diagnosis of lead toxicosis is radiography. In acutely poisoned birds, radiographs can be used to identify lead in the digestive tract, as metal particles will often be visible in the ventriculus and occasionally in the crop and proventriculus as well. However, the absence of metal densities in the digestive tract on a radiograph does not rule out heavy metal toxicosis. Some cases of lead poisoning are from sources that do not show up well radiographically, such as paint chips or leaded gas fumes. In other cases, the lead may have cleared the digestive tract by the time clinical signs are noted, or a slow release may occur from the bone months after exposure.

Other aids in diagnosis are clinical signs, which include vomiting, lethargy, anorexia, weakness, excess urination, diarrhea, and nervous system signs, such as ataxia, head tilt, blindness, circling, paresis, paralysis, head tremors, convulsions, and death. However, some birds die with no clinical signs displayed. Hemoglobinuria is secondary to resultant hemolysis and may be misinterpreted as bloody diarrhea. Acutely poisoned Amazons often present with the characteristic pink or bloody urine/urates of hemoglobinuria, but other species may have less typical droppings. Eclectus parrots consistently show biliverdinuria in heavy metal toxicoses, in contrast to the hemoglobinuria of Amazons.

Blood lead analysis will confirm the diagnosis of lead toxicosis and is recommended whenever possible, but the results may take several days. Heparinized blood lead values of over 20 µg/dl are suspect. If birds present with signs of lead poisoning but have negative blood lead levels, zinc toxicosis should be considered.

Lead toxicosis can be successfully treated if identified quickly. Treatment is generally started with the injectable chelating agent calcium EDTA. Acutely poisoned birds often respond very rapidly to chelation treatment. Birds that have chronic lead toxicosis or zinc toxicosis may take longer to respond. In such birds, treatment should be carried out for an extended period of time. Oral chelating agents such as penicillamine and DMSA are available and can be administered once the bird has stabilized, facilitating at-home treatment by the client. Some practitioners administer feline laxatives, mineral oil, peanut butter, or methylcellulose to try to move the metal out of the ventriculus. If large fragments of lead are present,

surgical removal may be required. In all cases, treatment should be continued until there is no evidence of lead in the GI tract or until clinical signs resolve.

If lead toxicosis is suspected based on clinical signs or possible exposure to lead, chelation therapy should be immediately initiated. Delaying treatment while awaiting test results could lead to a worsening of the condition.

Zinc Toxicosis

Zinc toxicosis, or new wire disease, has emerged as a clinically significant condition in pet birds. It results from chronic exposure to zinc, which can be found in bird cages in the hardware supplies commonly used for construction, galvanized wire, galvanized metal dishes, powder coatings, paint, and more. Even the white rust on galvanized metal may be toxic. Many household items also contain zinc, ranging from painted and varnished surfaces to common adhesives.

Especially common sources of zinc for pet birds are the galvanized wire and clips used to construct cages and galvanized containers and dishes that are not properly treated. Scrubbing the galvanized metal with a brush and a mild acidic solution, such as vinegar, will remove the “loose” zinc and reduce the risk but will not totally eliminate it. Birds eating nectar or acidic, moist foods (fruits) should not be fed from galvanized dishes, even if they have been treated. All pet bird owners should be instructed how to recognize galvanized and zinc-plated objects.

When birds ingest zinc, either from chewing and swallowing material that contains zinc or from drinking water or eating food that has absorbed it, the zinc is absorbed in the proventriculus and small intestine. Clinical signs of zinc toxicosis are nonspecific and tend to be dose related. Similar to the signs of lead toxicosis, the signs of zinc toxicosis include GI problems, excessive drinking and urinating, weight loss, weakness, anemia, cyanosis, and seizures. Pancreatic damage, renal necrosis, and tubular degeneration can also occur.

In cockatoos, a connection may exist between feather picking and zinc toxicosis, and it is often recommended that feather-picking cockatoos be tested for zinc exposure.

Most often, diagnosis of zinc toxicosis is made through observation of the clinical signs coupled with report of exposure to an improperly treated galvanized surface. Clinically and radiographically, zinc toxicosis is difficult to distinguish from lead toxicosis. However, most birds with zinc toxicosis will not have a radiodense foreign body. In addition, amylase levels of greater than 1,000 U/I are thought to be common with zinc toxicosis, and CPK levels may also be elevated. Verification of the condition can be made through testing blood zinc levels. Currently, the normal range for parrots is listed as .5–2.5 ppm; however, as diagnostic abilities and understanding of the condition improve, this range may change.

As for lead toxicosis, the initial treatment for zinc toxicosis is calcium EDTA, an agent that chelates with the metal in the system to prevent further absorption. Recovery is generally rapid once treatment has begun. Prevention is very important. Potential zinc sources should be identified and their use avoided or limited around pet birds, especially active chewers.